Consultative Group on International Agricultural Research
Mailing Address: 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.
Office Location: 801 19th Street, N.W.
Telephone (Area Code 202) 334-8021
Cable Address—INTBAFRAD

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Agenda Item 10

A Possible Expansion of the CGIAR:

A Draft Outline of Possible Approaches for TAC and the CGIAR

Attached is a paper prepared by Mr. McCalla on the above subject. TAC will be reviewing the paper during its 47th meeting during the week preceeding centers week. Mr. McCalla will introduce his paper and TAC reactions to it.

The Group will be asked to approve a general approach, criteria, and a timetable, and to comment on other issues which will be resolved later in the process.

Attachment

Distribution

CGIAR members
Center board chairpersons
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The Possible Expansion of the CGIAR: A Draft Outline of Possible Approaches for TAC and the CGIAR

by Alex F. McCalla
Chair of TAC

I. Introduction

The CGIAR since its inception in 1971, has been a dynamic and evolving institution. It is constantly reviewing its priorities and strategies and adjusting to a changing global environment. Recent discussions of the Impact Study and the 1985 TAC- CGIAR Priorities and Future Strategies paper identified issues of (1) sustainability, resource management and environmental degradation; (2) income generation, employment and equity; (3) evolving and changing partnerships with National Agricultural Research Programs; (4) changes in biology and the need to move upstream; and (5) slow rates of production increase in less-favored environments, as being some of the emerging issues needing explicit evaluation. Further over recent years a number of new entities, patterned after CG institutes and supported by many of the same donors, have been established outside of the CG. This raised the question of whether a Consultative Group on International Research "should be broad and inclusive rather than selective and exclusive".

Thus at its midyear meeting in Berlin in May 1988, the CGIAR engaged in a wide ranging discussion of the possibility of enlarging the CGIAR to include work currently being undertaken by an additional set of institutions called "the non-associated centers". The conclusion of that discussion was to undertake an examination of possible expansion. The institutions explicitly included for consideration were, in alphabetical order: AVRDC, IBSRAM, ICIPE, ICLARM, ICRAF, IFDC, IIMI, INIBAP, ITC and IUFRO.

TAC through its Chair agreed to provide the Group by International Centers Week 1988 the following items:

1. A preliminary overview (outline) of the adjustments to the broad fabric of CGIAR Priorities and Strategies necessary to encompass the broadened frame of reference and possible additional subject matter areas/institutes.

2. A proposed set of criteria for evaluating possible subject matter and institutional additions and a possible set of mechanisms for evaluating additions both in terms of subject matter and institutions;.

3. A proposed time table for the evaluation;

4. The implications of the evaluation process and possible subsequent expansion of the CGIAR for TAC's structure, organization, operational procedures, staffing and resource needs. This would be in two parts. First the immediate implications for TAC's current agenda and staffing - what items currently on TAC's agenda would of necessity be delayed and what additional resources would be needed. Second what adjustment in TAC's operations would be necessary in the long run.

TAC at its 46th meeting in India in June 1988 discussed at length the task facing it and its interpretation of the nature of the charge. TAC concluded that the charge was broad indeed. TAC decided it would be necessary to reconsider: (1) the CGIAR in the global context; (2) the subject matter coverage and priorities for existing as well as possible new areas of subject matter coverage; (3) potential new institutions as well as existing institutions as to mandates and research goals and priorities; (4) organizational modes and structures; and (5) such other matters as are necessary to do a comprehensive and considered analysis of the future of a potentially expanded CGIAR.

As a first step TAC instructed its Chair to draft a detailed substantive outline of a paper addressing the four items promised by TAC. What follows is a draft of that outline. It has been reviewed by a subcommittee of TAC. It has not been reviewed and approved by TAC as a whole. This draft is sent out in advance of the ICW 1988 to allow full consideration by Group members. It will be discussed in detail by TAC at its 47th meeting immediately preceding ICW 1988. The Chair of TAC will report on TAC reactions when the outline is discussed during Centers Week. To reiterate, the paper is currently the personal views of the TAC Chair. It will no doubt be modified following full TAC discussion.

The outline which follows has two distinct parts. The first part (Sections II, III & IV) presents a detailed outline of the global context in which the CGIAR will operate. It pays particular attention to the developing countries and the role of research in development. The last section (Section IV) addresses in some detail the current and potential future roles of the CGIAR. It also contains an exposition of how it is proposed that TAC undertake its subject matter/institutional analysis. When these three sections are completed, it will provide the necessary background for TAC and CGIAR analysis of potential expansion. It is proposed that it be completed as a substantive paper and be presented to the Group in May of 1989.

The remaining sections of the paper (Part Two) discuss proposals, with some options, for the process which TAC may chose to follow as TAC develops it recommendations for the CG. Section V presents options as to the scope of analysis to be undertaken. The range is from considering the full range of activities in potential as well as existing institutions to looking only at new subject matter areas/institutions.

Section VI proposes a set of criteria for evaluation and a process. The process of applying the criteria would occur in two

stages. Beginning immediately after ICW 1988, it is proposed that TAC constitute two, three or four panels to review the subject matter represented by clusters of possible additional institutions. These panels, made up of TAC members and external consultants, would also review comparable subject matter areas in current CG institutes. These reviews would need to be completed by March 1989 because they would provide necessary information for the analysis proposed in Section IV and would also provide a basis for a preliminary TAC evaluation as to whether there is an *a priori* case for possible inclusion. This stage would occur simultaneously with the completion of Part One.

The second stage would be a more detailed review including governance, finance and management, as well as activities and research relevance and quality, in preparation for a final TAC recommendation regarding inclusion of activities and/or institutes.

Section VII contains a proposed time table for the completion of the entire process and Section VIII is an outline of potential implications for TAC.

In Summary the paper outline is organized as follows:

		PART ONE
Section II	-	Agriculture in a Changing Global Context
Section III	-	The Contribution of Agricultural Research to Development
Section IV	-	The CGIAR in the Global Context
		PART TWO
Section V	-	How to Proceed with TAC Evaluation of Needed Subject Matter Areas and Candidate Institutions
Section VI	-	Criteria for Admission and Process to be Followed

Section VII - Proposed Time-Table for Evaluation

Section VIII - Implications for TAC

PART ONE

II. Agriculture in a Changing Global Context

This section will present a short overview of global developments in world agriculture, and discuss the many roles that agriculture plays in developing countries.

1. Agriculture's present situation and potential future directions.

This part will provide a broad brush overview of world agricultural development and international trade

- Developed Countries (DCs) - slow population growth, high incomes - subsidize agriculture with high stable prices (tax consumers) - results in slow demand growth, rapid production increases that leads to declining imports, rising exports and/or large stocks. Agriculture is a small part of GNP and employment and small farmers benefit from subsidies, specialization and intensification. DCs tend to be net exporters.

- Centrally Planned Economies (CPEs) - slow population growth, rapidly rising incomes, increasing demand for livestock products, slow productivity growth; subsidize consumers and tax producers; tend to be net importers.

- Developing Countries (LDCs) - high population growth, low but rising incomes, slow productivity growth; leads to rapid growth in demand, because they tax producers and subsidize consumers; tend to have increasing need for imports. LDCs are heterogeneous group of both low income and middle income countries. In general, however,

tend to be food deficit or marginally self-sufficient but with significant segments of malnutrition.

- Implications for future S&D balances

  a. With no significant international (GATT) or national trade or other policy change
  b. with trade liberalization and policy reform

- Conclusion - LDCs will continue to have major food deficits.

2. Emerging Global Trends: *The Likely Scenario in 2025*
   - population growth and improved health care in LDCs
   - rising incomes - LDCs & CPEs
   - rapid urbanization and evolving patterns of production - LDCs
   - growing environmental challenge and resource degradation
   - possible changes in climate and increased production instability
   - need for income and employment strategies in agricultural development
   - changing patterns of trade and adjustment policies
   - implications for food demand; volume and composition

3. Potential Sources of Increased Food Supplies
   - land expansion and reclamation, irrigation development - limited area available, major needs for capital
   - technology improvement and increases in productivity
   - improvement in purchased inputs - quantity and quality
   - intensification of production and improved food processing
   - policy reform and adjustments

- expanded trade - depends critically on overall economic development
- food aid - only of short term emergency relevance

4. Implications for Global, Regional and National Supply and Demand Balances

5. The Major Challenges facing the Global System over the next 30-40 years.
   - Continued Rapid Population Growth
   - Large and Expanding Numbers of Malnourished People
   - Deterioration of Natural Resources Base

   Therefore: Malnutrition, poverty, income generation, food supply and sustainability will remain critical issues.

6. Role of Agriculture in LDC Development

   While research priorities in the past have generally focused on agriculture's role in food supply, agriculture also has other contributions to make. These contributions must be considered in setting priorities for the future.

   a. The dominant role of agriculture is and will continue to be to provide food for farmers (subsistence production) and for rapidly increasing urban and non-farm populations.

   b. But agriculture has an important role to play in natural resource conservation and management.

   c. Increases in agricultural production and marketable surpluses provide stimulus for general economic growth.

   d. It is a potential source of income generation for the rural poor.

e. It is the major source of employment for the population of most developing countries.

f. Rising incomes in agriculture not only increase purchasing power to buy food but also goods from the non-agricultural sector. Similarly rising agricultural production generally requires purchases of manufactured inputs. These are further stimuli to economic growth and income generation on a national level.

g. Finally agriculture can be a source of foreign exchange earnings and/or mechanism for saving foreign exchange.

It is against these broad roles that research priorities must be formulated. To look only a research priorities in the context of increasing yield/output is no longer sufficient.

III. The Contribution of Agricultural Research to Development

To the extent that increased production must come mainly from improved productivity (yields) rather than from land area expansion, research and technology development have crucial roles to play. Some increases will also come from land area expansion and improvement. Research and technology development are also critical here especially if the expansion is in less favored areas. However we must not over play the importance of production increases. Surely in the 1980s we have learned that increasing production alone does not solve hunger problems. Increasing production is a necessary but not sufficient condition for alleviating malnutrition and hunger, because many poor people lack the purchasing power to buy food. Increased productivity cannot by itself always reduce hunger but if productivity does not improve, the situation will surely get worse. This section will develop these thoughts along the following lines.

1. The Nature and Organization of Agricultural Research

To be effective, agricultural research in the developing countries must not only be primarily targeted to the solution of the problems of small farmers, but must have the added requirements that the solutions it produces be environmentally sound and respond to the need for equity in the distribution of benefits.

- Some solutions are specific to particular agro-ecological and socio-economic environments; others have much wider applicability.

- A great diversity of research is therefore required which, in turn, needs to draw on a diversity of scientific support.

- The organization of research must recognize all these characteristics.

- The total effort must be deployed to meet the needs of different environments and there must be strong interaction among scientists in different disciplines, strong linkages among researchers, policy-makers, extension workers and farmers;

- There must also be linkages between those involved in downstream and upstream research.

2. Linkages Between Research and Development

- The central role of national agricultural research and extension systems

- The potential of Universities

- The overriding need to develop human capital

3. The Special Place of International Research and Research Related Activities

This section will discuss those things where international research has a special advantage in terms of types of activity.

Types of Activity

- international exchange of germ plasm, knowledge and people
- research in multiple environments
- research on problems of wide applicability
- transnational research issues - e.g. biological control
- methodology development, training, and information dissemination
- linking mechanism between advanced and developing country research institutions

4. Organizational and Institutional Approaches to International Agricultural Research

- The international tradition of science - scientific societies, congresses, collaborative research.
- International institutions for scientific collaboration - the ICSU family and others.
- International agricultural research in the developing countries - networks, regional institutions, other transnational institutions, international centers.

5. Factors Influencing Changing International Research Priorities

a. Changing food demands
b. Changes in science and its organization
   - analytical and information technology
   - biotechnology
   - changing roles of the public and private sectors

c. Evolution of scientific capacity in the developing countries

- increasing heterogeneity
- what is the role of the stronger research systems in developing countries?
- how can the international system assist the small and weaker ones?

IV. The CGIAR in the Global Context

The CGIAR while less than 20 years old, has evolved rapidly to take a prominent place in the global agricultural scene. To understand its current role and potential future, we must have some understanding of its origins. The CG evolved, as is well known, from early efforts by the Rockefellar and Ford Foundations, to develop appropriate technology for increasing agricultural production in developing countries. This pioneering research approach recognized that teaching poor farmers how to use developed country technology, directly transferred without adoption, would be unsuccessful. Rather the dominating premise was that applied research and technology development would have to be done in tropical environments recognizing natural and human resource constraints.

This philosophy permeated the origins of the CGIAR. It involved applied and adaptive research, highly focused on commodities of importance to poor peoples food supply, done in place by outstanding scientists and with the necessary facilities and resources to achieve rapid results. The underlying assumption was that research programs in developing countries were under developed, particularly for indigenous food crops. Thus the four dominant features of the CGIAR in its early years involved a food commodity focus; multidisciplinary teams and a plant breeding emphasis; developing country locations, but with global responsibilities; and client oriented interactions with National Agricultural Research Programs.

Organizationally the CGIAR was unique. It was a forum (meeting place) where independent centers interacted with independent donors to share perceptions of needs and to transfer resources. The group was advised by an independent Technical Advisory Committee (TAC) whose recommendations were hopefully respected but binding on no one. There was a minimum of bureaucracy, no central clearing house for money and no formal constitution or decision-making machinery.

From these simple and small beginnings (4 centers, less than a dozen donors, and a 20 million dollar budget) the CGIAR has grown to 13 centers, over 35 donors and over a 200 million dollar budget. It is now in the process of considering significant expansion. This chapter presents a brief analysis of its past and current roles; its strategies and modes of operation; the changes in the environment in which it operates; the changes in its priorities to date; and an analysis of future priorities, strategies and modes of operation as it contemplates expansion and approaches the 21st century.

1. Past and Current CGIAR Roles

Despite the rapid growth of funding and the expansion of coverage, the CGIAR remains a relatively small actor on the global agricultural research scene. This section documents its role and magnitude.

- changes in the global research system 1950 and 1960s versus 1970s and 1980s - rates of growth in effort by DCs, LDCs, CPEs and the private sector; more rapid growth in LDCs but proportion of value of production invested in research remains well below the developed countries; CGIAR, in effort terms, accounts for less than 5% of total global research expenditure (Basic data to be drawn from Judd, Boyce and Evenson "Investment in Agricultural Research and Extension" in Ruttan and Pray (eds) Policy for Agricultural Research Westview 1987.
- the nature of research in developing countries, circa 1970

- the role of CGIAR in the context of developing country research and food systems
  -- its relative magnitude - Judd, Boyce & Everson
  -- its selectivity and intensity of effort vis a vis broad tasks of NARS
  -- its contributions to improving food production - variety development -- spread of dwarf wheat and rice (see Dalrymple, and Herdt and Anderson in Ruttan and Pray.)
  -- its role in training, research strategies and methodology development
- CGIAR Goals and objectives and how they evolved 1971-1985.
  -- TAC Priority papers 1973, 1976 and 1979
  -- Shifting concerns and their relation to global food supplies and world prices

- the CGIAR's emerging role as a leader in agricultural research - the broader role of a consultative group

2. <u>CG Modes and Operational Strategies</u>

The CGIAR pioneered new approaches to applied agricultural research. While they are now well recognized, it is instructive to examine some of the specific and, at times, unique features of CG institutions:

- The Center (of excellence) concept, involving problem oriented, multidisciplinary, commodity-focused applied research; critical mass of scientists; outreach to clients; role in human capital development; well funded and equipped.

- Global mandates and wider adaptability of research results, combined with recognition of the diversity

of environments, farming systems and food consumption patterns.

- The use of disciplinary scientists as parts of teams but an apparent bias against disciplinary or factor-based institutes.

- Independence of centers in determining their research strategies; interactions with NARS in training and institution building -- resulting in inter-center conflicts, overlaps and confusion for NARS; the emergence of needs for inter-center cooperation, System versus Center perspective and the notions of System-wide programs in addition to Center programs and commodity programs

- An evolution of the System to a mixture of modes, involving different modes of interactions with NARS, the emergence of networks, the differential rate of development of NARS and the change in rhetoric to talk of partners and collaborators rather than clients and recipients.

- The overall form of the CGIAR in terms of its governance and approaches to improving research capacity is, in many respects, unique. Why has it been successful? Is it because of its focus on multidisciplinary, commodity-centered research? Is it because it has been selective rather than attempting to fill all gaps? Will the proposed expansion fundamentally alter its unique character?

Basic question: Are current CG and TAC views of modes and approaches appropriate for the changing environment

in which CG exists -- particularly if the system is expanded?

3. Changes in CG Priorities since 1985

- explicit and expanded emphasis on long term sustainability of agricultural production

- identification of "improving resource management and conservation" to increase sustainable food production as an explicit objective and the proposal to double efforts in the area

- the explicit recognition that less progress has been made in more difficult environments (e.g. rainfed, and drier areas)

- the recognition, as well, that the CG must remain concerned with maintaining and enhancing productivity in more favored areas because it is these areas which will have to provide most of the food for rapidly growing urban populations

- increased collaboration and cooperation with a dynamic set of heterogenous national research programs.

- increased concern with intercenter/group impacts and the need for more coherence of "system" programs

- the inclusion, as a legitimate criterion for priority setting, of the potential of technical change for income and employment generation

- the move upstream towards more strategic research. This is driven both by the maturation of advanced developing country research systems and the rapid and

exciting developments in molecular biology (biotechnology)

- the explicit adoption of a farming systems perspective in formulating and implementing research priorities

All of these changes require a fundamental look at CG future priorities.

4. Necessary and Desirable Changes in CG Priorities, Strategies and Modes

Research is by its nature a long term activity and as the length of the horizon expands further into the future the more one moves upstream towards strategic and basic research. This characteristic, coupled with the time required to establish or significantly change a research enterprise requires us to think about needs 10-20-30 and 40 years ahead. The planning horizons of centers have clearly changed, some are planning for 2010, 2025 and one even thinking about 2050. The CG as an entity also ought to have long as well as medium and shorter term planning horizons.

The context for long range planning needs to be at least LDC food needs in 2025. These will be influenced by the major trends outlined in section II-2 -population growth, income growth and urbanization. Let us recall the magnitudes. The U.N. median population projection for developing countries for 2025 is 6.6 billion people compared to 3.6 billion in 1988 and 60% will live in urban areas compared to about 30% now. Even with modest rates of economic growth, incomes in nominal terms will triple. The implications of these numbers are substantial. Assuming that the rate of land area expansion which prevailed over the last 2 decades continues (a very optimistic assumption), global yields of major marketed food and feed crops will need to more than double. Clearly the yield

potentials of these commodities will also need to increase significantly because closing current yield gaps will be insufficient even with vastly improved crop/livestock system management.

It is against this backdrop that we now need to be thinking about the future of the CGIAR. Many more variables also need to be considered including potential advances in basic biology which could increase biomass production by altering photosynthetic efficiency, improving the harvest index, improving responses to nutrients, improving resistance/tolerance to various stresses; changing capacities of research enterprises - public and private - in developing, developed and centrally planned countries; changes in institutions and policy regimes; and possible deterioration or improvement in the global resource base. The complexity of the task is enormous, but that does not absolve us from thinking about what role an international research operation should play in that context.

The completion of such a comprehensive review will take longer than the CGIAR can wait to consider the current expansion proposal. However such an exercise is crucial to long range priority setting, a task TAC must undertake. TAC will discuss the initiation of a major think tank exercise, to be completed in two years, to explore possible scenarios for 2025. Initial findings would be available before the completion of this exercise.

In the interim it is necessary for TAC and the CG to revise or reaffirm the statement of goals for the system adopted in 1986 and formulate explicit priorities for the next decade which takes into account changes which have occurred since the last TAC/CGIAR priority paper.

Following is the goal statement for the System, adopted in 1986:

> "Through international agricultural research and related activities, to contribute to increasing sustainable food production in developing countries in such a way that the nutritional level and general economic well-being of low income people are improved."

TAC further elaborated on the goal as follows:

> "The CGIAR supports a System devoted agricultural research and related activities for the benefit of developing countries. Its main effort has been directed towards the elimination of food deficits, but the scope of its activities has been gradually broadened. While not a development agency, it has become increasingly concerned with problems of alleviating hunger and poverty, recognizing that both relate not only to total production, but also to the distribution of income. More recently, TAC the Impact Study and the Bellagio group have all drawn attention to the importance of sustainability of production systems and to the conservation of natural resources.
>
> "The System recognizes that its purpose cannot be achieved in isolation and that it is only one participant in a vast, interrelated set of activities. Through increasing collaboration and partnership, it must constantly contribute to strengthening national systems. In order to maintain its vitality, it must also collaborate with appropriate advanced institutions throughout the world. To be effective it must be selective, avoid duplication and concentrate its efforts."

(p. 220, CGIAR Priorities and Future Strategies. TAC/CGIAR/FAO 1987).

It is suggested that in the short term this goal statement, with slight modification, continue to serve as a basis for considering CGIAR priorities and that decisions for changing the system by incorporating additional entities be guided by whether such changes will contribute, significantly, to the achievement of the system's goal.

The 1986 goal statement refers to "increasing sustainable food production ..." (emphasis added). It is suggested, that this goal of increasing food production be modified to incorporate the concept of achieving food self-reliance in the developing world (food self-reliance being defined as the capacity of a nation to provide a sufficient stable food supply to all of its inhabitants either from domestic production or from production of exportable goods to enable commercial imports to cover the domestic deficit.) It should be clearly understood that self-reliance does not necessarily imply self-sufficiency. Rather it implies producing those things that a country is best able to do and where necessary trading them for required food. The implications of a goal of self-reliance are that the range of agricultural commodities that are potentially in a farming system is likely to be large. This does not and should not commit the CGIAR to working on all commodities but it does commit us to taking account of diverse farming systems and their capacities to produce income and employment as well as marketable agricultural commodities. The direct implication is that the CG should not rule out, by prior assumption, non-basic crops which provide food directly or indirectly. Therefore the CG should support research activities which contribute most effectively to improving a country's capacity for food self-reliance. There

are several direct implications that would follow from this expanded priority statement.

First, given population growth and urbanization, the CG should retain high priority for basic crops grown in more favored areas (e.g. irrigated) because it is the marketable surplus grown in these areas that will help feed urban, predominantly poor populations.

Second, parallel with this goal, there should be increased attention given to indigenous, subsistence crops which feed rural populations in less favored areas. In stating this priority it must be clearly understood that progress in these areas will be more difficult, slower and quantitatively less in contributing to the national food supply and that these areas will not provide significant surpluses for non-farm populations. The balance between favored and less favored areas is critical and will be different by country, region, commodity and farming system. Nevertheless we must not abandon yield gains accomplished to date in more favored areas. We need to sustain and enhance these yields if we are to contribute to long range food security in 2025.

The third implication of the goal of assisting countries' to achieve sustainable food self-reliance is that increased attention must be paid to natural resource management. This concern with resource conservation and management is absolutely critical to a sustainable production system. The critical question for the CGIAR is what portion of this type of research does an international system have a comparative advantage in pursuing. In the extreme it can be stated that each country, each region, each district and even each farm has a unique resource base. For some it follows from this that, research on natural resource issues is so location specific that it can be only done by national programs. But is this really true? Clearly some major resource issues transcend national

boundaries. For example deforestation because of energy needs, results in flooding and subsequent water shortages, increases erosion and siltation of downstream reservoirs, increases environmental pollution and ultimately diminishes capacity to produce agricultural commodities in favored and less favored areas alike. River basins seldom are solely contained within national boundaries as several major basins in Asia show. Further examples of international migration of pests and diseases, wind erosion and pollution are prevalent. Surely an international research organization could contribute by (1) clearly defining the magnitude and potential future consequences of the process; (2) by contributing methodology for characterizing, analyzing and evaluating interventions in mega ecological zones. We need to know the problem and how to address it in order to support national programs in pursuing specific research approaches; (3) collecting, evaluating and disseminating available information from the global research community that is relevant to national policy choice; (4) doing actual research on a selective basis to both develop methodology and basic information and to provide examples of how to do it; (5) providing training of various sorts; and (6) exploring appropriate institutional and management approaches.

The fourth implication is that a sustainable agricultural system involves both issues of productivity -- expanding yield potential and improving management to reduce the yield gap -- as well as long term resource management. The intellectual challenge of converting a concept of, and commitment to "sustainability" into operational research programs and for setting priorities within research program is enormous. The CG has a critical leadership role to play in this area.

The CG is, as noted, but a small part of the global research system and therefore to be effective must work in partnership with all relevant research entities. The evolution of NARS has been significant in many cases, resulting in a much

more heterogenous set of partners than was perceived at the initiation of the CG. Similarly rapid developments in biology have altered the desirable linkages with advanced institutes. CG entities must adjust to these changes which will of necessity require movement upstream because an effective linking role requires institutes to be in touch with both sets of developments. At the same time there is need to devise or strengthen appropriate mechanisms for dealing with less well developed national programs especially in the smaller countries. The implication of this is that simplistic notions of homogenous programs which will be relevant to all partners must be questioned. It is therefore necessary for both the components of CGIAR and the CG itself to adopt more flexible research strategies which reflect these and other changes. The implication which seems inevitable is a more decentralized approach to priority setting.

In this changing context there is a critical role for international research. International agricultural research can help (and should help) by concentrating its efforts on the poor and on sustainability. By targeting and coordinating efforts on:

a. assuring that production potential in more favored environments is sustained and enhanced because it is the marketable surplus from these areas that will feed the urban and non-farm poor. Over time NARS will assume a greater role
b. less favored environments in which population pressure is high vis-a-vis the potential productivity of the resource base, given existing knowledge and socio-economic possibilities.
c. generating new knowledge based on science to increase sustainable productivity and to solve biotic constraints to achieve yield potential.
d. providing support to crop management research (CMR).

e. helping remove institutional constraints for effective R&D

f. helping remove policy constraints and overcoming market failures.

The global effort must be complemented by regional efforts targeted at specific constraints and problems shared by countries at the regional level. Thereby: (a) tapping regional research and institutional capabilities and capturing economies of scale in research; (b) providing for coordination of efforts of international institutions and NARS to address common researchable problems; and (c) for helping coordinate donor support.

The task before us then is to adjust CG priorities and modes of approach to this constantly changing environment. This makes the process more difficult but at the same time more challenging. TAC needs to develop a revised set of priorities to reflect our current thinking on these matters as a backdrop for the current task of considering possible expansion.

5. Mechanisms for Considering Priorities in the CGIAR

a. The Need for a Logical, Objective Approach

The considerations of the expansion of the CGIAR must take place in the context of the changing priorities discussed in the preceding section. This consideration cannot be done by simply looking at a discrete set of existing institutions currently on the list for possible admission. To do the job properly we must first begin by attempting to characterize the task before us in terms of research problems and approaches.

- we must look at all current and potential elements of the CG and at additional possible needs not covered by either current CG centers or the candidate centers. Only with that approach can rational priority setting occur.

- The current task facing the CG offers a unique opportunity to review the entire scope of its activities, current and future, and chart a long term course. In doing this no existing program or institution should be exempted from careful scrutiny and potential change.

Having said the above, the task of how to do it is formidable.

- Rationality dictates that we should first begin with problems and priorities and then ask what prevents or constrains us from solving these problems.
- The next logical step is to ask whether the constraints are amenable to research or other kinds of solutions and to identify which research approaches are most likely to reduce the impact of the constraint.
- Next one can ask whether current CG activities are addressing these researchable problems.
- Ascertain whether candidate activities/institutes improve or duplicate current coverage. This step would also identify remaining areas in need of further attention.
- Evaluate the distribution of all current activities relative to future research needs necessary to remove constraints. These steps are summarized in Table 1.

The final step, to be taken only after careful analysis, is to present a revised statement of CG priorities and recommend appropriate deletions and adjustments in existing programs.

b. How TAC Might Proceed

The problems (critical issues) were outlined in Section II-5. These were malnutrition, poverty, income generation, food supply and sustainability. The next step would be to identify constraints which prevent the solution of these problems. A proposed set of constraints is contained on

Table 1. Steps in a Rational Evaluation Process

Step 1.	Identify critical problems in a global context which are amenable to international research - the time horizon should be at least 2025.
Step 2.	Determine constraints to critical problem solution.
Step 3.	Decide how the constraint might be relaxed by research and/or by changes in policy and investment.
Step 4.	Identify appropriate research (and research related) strategies and approaches.
Step 5.	Determine which research approaches are most likely to contribute to relaxing the constraint.
Step 6.	Identify that subset for which conform to the goal and special advantage of the CGIAR.
Step 7.	Evaluate current CG research activities to determine degree of coverage .
Step 8.	Evaluate how candidate activities would augment and/or duplicate CG activities. This step would also identify remaining areas needing better coverage.
Step 9.	Assess the current distribution of efforts among all research thrusts/approaches relative to perceived future needs.
Step 10.	Produce a revised statement of CG priorities with recommended additions to the CG and adjustments in existing programs.

the left hand side of Chart I. The six broad sets - land area, productivity, post-harvest; markets and infrastructure, policy; and institutions; - are further tentatively subdivided and examples provided. Research strategies are suggested across the top of Chart I. Further detail on these research strategies is contained in Table 2. The first task then would be to identify which research approach(es) are most relevant to relax the constraint. For example, species improvement would be the major strategy relaxing genotypic constraints and increasing yield potential. This table, by use of relative weightings, could give one picture of the appropriate components of a global research strategy.

However, the relative importance of constraints, and the most appropriate research approach may differ by commodity, ecological zone and region. A full analysis therefore would require additional analysis from these perspectives. Analytical tables which TAC would attempt to fill in are presented in Charts 2, 3, and 4. Chart 2 looks at commodity groups in the context of research constraints. The composition of the commodity groups is given in Table 3. Chart 3 would allow identification of the relative importance of particular ecological zone issues relative to constraints. Chart 4 does the same for Regions.

Upon completion of looking at appropriate research approaches for the constraints, conditioned by consideration of commodity, ecological zone and regional differences, TAC should be able to get a more refined picture of the appropriate components of a global research strategy. One could then identify what components of that global strategy should be undertaken by the CGIAR.

Under the evolving system of evaluating five year program and budgets for each center research activities has been identified. It is relatively easy to cross walk these into a

CONSTRAINTS		EXAMPLES	RESEARCH APPROACHES & STRATEGIES										INVEST. DEV. PROB.
			LAND USE RESEARCH	RESOURCE MANAGEMENT RES.	SPECIES IMPROVE-MENT	SPECIES/ SYS. MGMT. RESEARCH	POST HARVEST RES	ECONOMIC RESEARCH	SOCIAL SYSTEMS RESEARCH	MGMT/ ORGANIZ. RESEARCH	HUMAN CAP IMPROV.	INFO. DEV. & DISSEM.	
A. Land Area		• limited land area											•
B. Productivity	1. Physical (soil)	a. soil erosion b. soil toxicities (salinity, acidity, ...) c. available nutrients											
	1. Physical (water)	d. rainfall e. irrigation water f. drainage											
	1. Physical (temperature)	g. heat h. cold temperature											
	2. Biological	a. pests b. diseases c. weeds											
	3. Genotypic	a. yield potential b. quality c. susceptibility to stresses d. plant/animal type											
C. Post Harvest Management	1. Storage 2. Processing												
D. Markets & Infrastructure	1. Transportation 2. Information and Markets 3. Distribution Systems.												
E. Policy	1. Macro Policy	a. exchange rate policy b. trade barriers c. income policy											
	2. Ag. Sectoral Policy	a. input/output prices b. credit c. land tenure d. access to inputs											
F. Institutional	1.. Human Capital	a. quantity b. quality											
	2. R&D Organization	a. research b. R&D linkages c. information generation & dissemination											

TABLE 2

RESEARCH APPROACHES AND STRATEGIES

I. Land Use Research
   - A. Land use surveys
   - B. Agroclimatic characterization
   - C. Definition of megaenvironments

II. Resource Management Research
   - A. Natural Resources
     1. soils
     2. water management and drainage
   - B. Inputs
     1. fertilizer quality
     2. pesticides
     3. mechanization
     4. labor efficiency

III. Species Improvement
   - A. Germ plasm conservation/introduction
   - B. Breeding
   - C. Physiology
   - D. Biotechnology

IV. Species and Systems Management Research
   - A. Population density
   - B. Integrated pest management
   - C. On-farm research/farm management

V. Post Harvest Research
   - A. Biological
   - B. Mechanical/physical

VI. Economic Research
   - A. Farm level (micro)
   - B. Market and sectoral (micro)
   - C. *Ex-ante* assessment (micro)
   - D. National and international policy (macro)

VII. Social Systems Research
   - A. Adoption studies, household decision making
   - B. Understanding village and social systems

VIII. Management and Organization Research

IX. Human Capital Improvement
- A. Degree training
- B. Short courses
- C. Post-doctoral and sabbatical.

X Information Development, Processing, Dissemination

CHART 2 - CONSTRAINTS BY COMMODITY GROUP

CONSTRAINTS		EXAMPLES	COMMODITIES/COMMODITY GROUPS								
			MAJOR CEREALS	OTHER CEREALS	FOOD LEGUMES	ROOTS AND TUBERS	BANANAS AND PLANTAINS	LIVESTOCK	OIL CROPS	AQUACULTURE	NON-FOOD CROPS
A. Land Area		• limited land area									
B. Productivity	1. Physical (soil)	a. soil erosion									
		b. soil toxicities (salinity, acidity, ...)									
		c. available nutrients									
	1. Physical (water)	d. rainfall									
		e. irrigation water									
		f. drainage									
	1. Physical (temperature)	g. heat									
		h. cold temperature									
	2. Biological	a. pests									
		b. diseases									
		c. weeds									
	3. Genotypic	a. yield potential									
		b. quality									
		c. susceptibility to stresses									
		d. plant/animal type									
C. Post Harvest Management	1. Storage										
	2. Processing										
D. Markets & Infrastructure	1. Transportation										
	2. Information and Markets										
	3. Distribution Systems.										
E. Policy	1. Macro Policy	a. exchange rate policy									
		b. trade barriers									
		c. income policy									
	2. Ag. Sectoral Policy	a. input/output prices									
		b. credit									
		c. land tenure									
		d. access to inputs									
F. Institutional	1. Human Capital	a. quantity									
		b. quality									
	2. R&D Organization	a. research									
		b. R&D linkages									
		c. information generation & dissemination									

CHART 3 - CONSTRAINTS TO ECOLOGICAL ZONE

CONSTRAINTS		EXAMPLES	ECOLOGICAL ZONES						
			ARID	SEMI ARID	SUB-HUMID	HUMID	HIGHLAND	MEDITERRANEAN	TEMPERATE
A. Land Area		• limited land area							
B. Productivity	1. Physical (soil)	a. soil erosion							
		b. soil toxicities (salinity, acidity, ...)							
		c. available nutrients							
	1. Physical (water)	d. rainfall							
		e. irrigation water							
		f. drainage							
	1. Physical (temperature)	g. heat							
		h. cold temperature							
	2. Biological	a. pests							
		b. diseases							
		c. weeds							
	3. Genotypic	a. yield potential							
		b. quality							
		c. susceptibility to stresses							
		d. plant/animal type							
C. Post Harvest Management	1. Storage								
	2. Processing								
D. Markets & Infrastructure	1. Transportation								
	2. Information and Markets								
	3. Distribution Systems.								
E. Policy	1. Macro Policy	a. exchange rate policy							
		b. trade barriers							
		c. income policy							
	2. Ag. Sectoral Policy	a. input/output prices							
		b. credit							
		c. land tenure							
		d. access to inputs							
F. Institutional	1.. Human Capital	a. quantity							
		b. quality							
	2. R&D Organization	a. research							
		b. R&D linkages							
		c. information generation & dissemination							

CHART 4 - CONSTRAINTS BY REGION

CONSTRAINTS		EXAMPLES	REGIONS: LATIN AMERICA	WEST ASIA & NORTH AFRICA	SUB-SAHARAN AFRICA	ASIA
A. Land Area		• limited land area				
B. Productivity	1. Physical (soil)	a. soil erosion				
		b. soil toxicities (salinity, acidity, ...)				
		c. available nutrients				
	1. Physical (water)	d. rainfall				
		e. irrigation water				
		f. drainage				
	1. Physical (temperature)	g. heat				
		h. cold temperature				
	2. Biological	a. pests				
		b. diseases				
		c. weeds				
	3. Genotypic	a. yield potential				
		b. quality				
		c. susceptibility to stresses				
		d. plant/animal type				
C. Post Harvest Management	1. Storage					
	2. Processing					
D. Markets & Infrastructure	1. Transportation					
	2. Information and Markets					
	3. Distribution Systems.					
E. Policy	1. Macro Policy	a. exchange rate policy				
		b. trade barriers				
		c. income policy				
	2. Ag. Sectoral Policy	a. input/output prices				
		b. credit				
		c. land tenure				
		d. access to inputs				
F. Institutional	1.. Human Capital	a. quantity				
		b. quality				
	2. R&D Organization	a. research				
		b. R&D linkages				
		c. information generation & dissemination				

TABLE 3

COMMODITIES/COMMODITY GROUP

MAJOR CEREALS
- Wheat (plus Barley and Triticale)
- Rice
- Maize

OTHER CEREALS
- Sorghum
- Millets

FOOD LEGUMES
- Pigeon Peas
- Chick Peas
- Cowpeas

ROOTS AND TUBERS
- Potatoes
- Cassava
- Sweet Potatoes
- Yams

BANANAS AND PLANTAINS

LIVESTOCK
- Cattle
- Sheep
- Goats

OIL CROPS
- Soybeans
- Groundnuts
- Coconuts

VEGETABLES

AQUACULTURE

NON-FOOD CROPS

set of research thrusts similar to those used in the 1985 Priority and Strategies paper. These thrusts are sufficiently similar to the Research Approaches outlined in Table 2 that the constraint analysis that would be conducted in the preceding exercise could be linked to existing activities in CG and non-associated centers.

Table 4 cross walks CG activities (from the budget exercise) into eighth major research thrusts. Seven of these are the same as from the priorities paper (I, II, III, IV, V, VI and VIII). The eight is a category to capture exploratory, impact and methodology research. It replaces the eighth priority paper thrust of "integration of efforts" which has a limited operational dimension. In Chart 5, the approved five year P&Bs have been used to show relative distribution of efforts by center. The table can be completed for other centers as their 5 year Programs and Budgets are submitted. One could then attempt to generate via the panel reviews, comparable information for the candidate institutes in terms of their research programs. This would show relative effort by institution.

An alternative way of looking at effort is in absolute magnitudes which is shown in Chart 6 by research thrust. This could provide additional information on existing institutes and potential new ones.

Using these analytical tables one could provide comparative analysis as to how the additions would contribute to CG objectives. The information would be used as an input into TAC collective judgement as to desired future coverage and priorities as we consider the final step in the process, - namely to re-evaluate the program structure of an expanded CGAIR as it approaches the 21st Century. Having completed this subject matter analysis TAC would proceed to apply the appropriate

TABLE 4.
CG Activities Included in Major Research Thrusts

I. RESOURCE CONSERVATION & MANAGEMENT
- 1. Water Management Res
- 2. Soils Mgmt. & Conservation
- 3. Agro Climatology
- 29. Agro forestry
- 4. Germ Plasm
  - a. Research on conservation & diversity
  - b. collection
  - c. conservation, characterization & documentation

II. CROP PRODUCTION RESEARCH
- 4. Germ Plasm
  - d. enhancement
  - e. breeding/improvement
  - f. international trials
- 5. Seed Production
- 6. Crop Systems Research
- 10. Plant Nutrition
- 11. Machinery Res & Dev
- 9. Plant Protection
- 8. Crop-Livestock Systems

III. LIVESTOCK PRODUCTION RESEARCH
- 7. Livestock Systems
- 12. Livestock Nutrition
- 13. Livestock Reproduction
- 14. Livestock Diseases

IV. COMMODITY CONVERSION & UTILIZATION
- 28. Commodity Conversion & Utilization Anal.

V. ANALYSIS HUMAN NUTRITION LINKAGES
- 25. Nutrition Analysis

VI. FOOD & AGRICULTURAL POLICY RESEARCH
- 22. Econ & Social Analysis Micro level
- 23. Market Analysis
- 24. Policy Analysis

VII. EXPLORATORY, IMPACT & METHODOLOGY RESEARCH
- 18. Res on Approaches, Concepts & Methods
- 26. Research on Research
- 27. Exploratory Research

VIII. INSTITUTION BUILDING, TRAINING & NETWORKING

15. Training
16. Conferences & Seminars
17. Documentation & Dissemination
19. Conselling & Advising NARS
20. Technical Assistance
21. Coordination of Networks

TOTALS

CHART 5. PERCENTAGE DISTRIBUTION OF EFFORT BY RESEARCH THRUST AND ACTIVITY - 1988*

	CIAT	CIMMYT	CIP	IBPGR	ICARDA	ICRISAT	IFPRI	IITA	ILCA	ILRAD	IRRI	ISNAR	WARDA	AVRDC	BSRAM	ICIPE	ICLARM	ICRAF	IFDC	IIMI	INIBAP	ITC
I. RESOURCE CONSERVATION & MANAGEMENT	**5.6**	**0**	**0**	**71.7**				**1.5**	**2.9**	**0**												
1. Water Management Res									0.3													
2. Soils Mgmt. & Conservation									1.2													
3. Agro Climatology	5.6								1.4													
29. Agro forestry																						
4. Germ Plasm																						
a. Research on conservation & diversity																						
b. collection																						
c. conservation, characterization & documentation				71.7																*		
II. CROP PRODUCTION RESEARCH	**42.2**		**51.5**					**55.6**	**14.3**	**0**												
4. Germ Plasm	25		26					33.6	8.9													
d. enhancement																						
e. breeding/improvement																						
f. international trials																						
5. Seed Production	1.9																					
6. Crop Systems Research	5.7		7					12.4	3.8													
10. Plant Nutrition	1.9								1.3													
11. Machinery Res & Dev									0.3													
9. Plant Protection	7.7		21.7					8.3														
8. Crop-Livestock Systems								1.3	13.5													
III. LIVESTOCK PRODUCTION RESEARCH	**3.7**		**0**						**46.3**	**75**												
7. Livestock Systems									2.9													
12. Livestock Nutrition	3.7								15.4													
13. Livestock Reproduction									6.2													
14. Livestock Diseases									8.3	75												
IV. COMMODITY CONVERSION & UTILIZATION	**0.6**		**1**					**2.6**	**1.7**													
28. Commodity Conversion & Utilization Anal	0.6		1					2.6	1.7													
V. ANALYSIS HUMAN NUTRITION LINKAGES	**0**		**0.4**					**2.6**	**0.6**													
25. Nutrition Analysis			0.4					2.6	0.6													
VI. FOOD & AGRICULTURAL POLICY RESEARCH	**3.1**		**2.3**				**65.3**	**1.3**	**4.8**	**4.9**												
22. Econ & Social Analysis Micro level	3.1		1.6						2.6	4.9												
23. Market Analysis			0.7					1.3	1.6													
24. Policy Analysis							65.3		0.4													
VII. EXPLORATORY, IMPACT & METHODOLOGY RESEARCH	**5.2**		**3.4**				**20.6**		**0.4**			**27.4**										
							20.6		0.4			27.4										
18. Res on Approaches, Concepts & Methods																						
26. Research on Research	5.2		1.8																			
27. Exploratory Research			1.6																			
VIII. INSTITUTION BUILDING, TRAINING & NETWORKING	**40.7**		**41.4**	**28.3**			**14**	**23.1**	**29**	**19.8**		**72.6**										
15. Training	14.9		12.6	9.7				11.4	12.9	12.5												
16. Conferences & Seminars	4		0.7						1.7	0.9		15.6										
17. Documentation & Dissemination	6.6		6.1				14	6.9	9.2	5												
19. Conseling & Advising NARS	6.8		22					4.8	1	1.4		46.4										
20. Technical Assistance	2.4								1.4			10.6										
21. Coordination of Networks	6			18.6					3.4													
TOTALS	98.8		100	100			99.9	100.2	100	99.7		100										

*Tentative numbers for illustration only

CHART 6. EXPENDITURE BY RESEARCH THRUST*
1988 CONSTANT $

	CIAT	CIMMYT	CIP	IBPGR	ICARDA	ICRISAT	IFPRI	IITA	ILCA	ILRAD	IRRI	ISNAR	WARDA	AVRDC	IBSRM	ICIPE	ICLARM	ICRAF	IFDC	IIMI	INIBAP	ITC	IUFRO
RESOURCE CONSERVATION & MANAGEMENT I	X			XXX X				XX/	Δ														
CROP PRODUCTION RESEARCH II	XXX XXX XXX		XXX XX					XXX XXX XXX	XX														
LIVESTOCK PRODUCTION RESEARCH III	◊								XXX XXX	XXX XXX X													
COMMODITY CONVERSION & UTILIZATION IV	Δ		Δ					Δ	Δ														
ANALYSIS HUMAN NUTRITION LINKAGES V			•					Δ	•														
FOOD AND AGRI-CULTURAL POLICY RESEARCH VI	◊		Δ				XXX	Δ	◊	Δ													
EXPLORATORY, IMPACT & METHODOLOGY RESEARCH VII	X		Δ				X		•			X											
INSTITUTION BUILDING, TRAINING & NETWORKING VIII	XXX XXX XXX		XXX X	XX			◊	XXX /	XXX X	X		XXX X											

* Tentative numbers, for illustration only.

• = < $100,000
Δ = $100,000 - $500,000
◊ = $500,000 - $1,000,000
X = [illegible]

criteria to the activities and institutions in the set of candidate institutions.

(Once information in Tables is complete, this section will be expanded to summarize the important elements contained therein.)

PART TWO

V. How to Proceed: TAC's Evaluation of Subject Matter Areas and Entities for CG Support

1. Options:
   Based on subject matter analysis in Section IV-5, TAC would consider various options on how the CG could proceed. These include:

   a. to look at entire subject matter areas across CG and non-CG Centers, and reconsider formal and operational mandates of all centers - i.e. the clean slate approach; or

   b. to consider non-CG Centers as subject matter areas (not as institutional entities) and to assess to what extent they could be (i) integrated into programs of existing CG Centers, or merit either (ii) partial CG support through funding of discrete activities/programs implemented by the respective centers as "associated CG institutions", or (iii) full institutional admission as CG entities; or

   c. to admit in the CG as entities those that fill major gaps, but with recommendations as to how their programs should be adjusted to meet CG objectives better, including recommendations on specific

linkages and interfaces with existing CG Centers; or

d. to admit as CG entities those which contribute to filling major gaps - i.e. an "in" or "out" decision without change in goals or organization of entrants.

2. The Recommended TAC Approach
(to be determined by TAC)

3. Potential Implications for the Structure of the CGIAR System in the long-term.

The analysis of the long-term scenarios in terms of the evolving needs, and of the perceived evolution of the institutional context in developing countries, would allow TAC and the CGIAR to consider whether alternative potential structures of the CG System in the long-term are necessary and evaluate their advantages and limitations in the global context. The recommended long-term structure should be one that allows the system to play a catalytic role, albeit marginal but critical, for achieving optimal synergy in the global agricultural research system in the most cost-effective manner.Such a structure should provide for the flexible tapping of all possible forces that could contribute to the CG goals, and for the capturing of economies of scale in international agricultural research for the benefits of all developing countries, particularly the smaller and low income countries. The potential long-term structures to be analyzed might include:

a. linear expansion of the present CG System - i.e. adding more centers while keeping essentially the present structure,

b. A federation of CGs, with each CG organized around subject matter or donor support group (e.g. food crops, other crops, natural resources), and its own secretariat and TAC. The primary function of the TAC for the Federation would be the formulation of broad priorities and strategies for the entire system. The TACs of the individual CGs would have the other two accepted functions of TAC namely, monitoring (e.g. through reviews, budgets, etc..) and program and budget appraisal functions.

c. A CG for Centers with global responsibilities in strategic research, complemented by "regional CGs" supporting regional applied research institutions, each with its own regional Secretariat and TAC, but coordinated/linked/integrated with the Secretariat and TAC of the CG for Centers with global responsibilities.

d. A CG much like the present one, perhaps expanded but keeping the same structure, complemented by "regional CGs" supporting regional research networks, each with its own regional Secretariat and TAC, coordinated/linked/integrated with the CG Secretariat and TAC.

e. Some appropriate combination of (c) and (d) above as best suited to the needs of the different regions.

f. Other options

As the System discusses and develops the most appropriate long-term structure, there might be a need to rely on a transitional structure. Several alternatives for transitional structures could be analyzed by TAC as

to their advantages and limitations. These might include different groupings of the existing non-CG international centers under separate but closely linked CGs.

VI. Criteria for Adding Elements to an Expanded CGIAR and Operational Options

1. Criteria

Three broad categories of criteria should be employed by TAC in its two stage process of considering the non-CG entities as candidates for possible incorporation into the CGIAR:

- A set of criteria which would be used to determine which of the activities of each of the non-CG entities would contribute significantly to the goals and objectives of the CGIAR (Criteria for Candidate Activities)

- A second set of criteria which would be employed to assess both the quality and the relevance of those activities in both stages of the process. (Quality and Relevance Criteria)

- A third set of criteria which would be brought into play in the second stage for those entities deemed appropriate for admission. This step would assess the non-CG entity as a whole as to the appropriateness of its mission and goals, its governance and management, and its planning and funding to the functional framework of the CGIAR (Institutional Criteria).

(a) Criteria for Candidate Activities would encompass the following considerations:

(i) Whether there are a significant number of activities which can be considered to contribute significantly to CGIAR goals and would justify CGIAR support.

(ii) Whether continued research on these activities is best conducted by the non-CG entity, or whether these activities would be more effectively undertaken through their redistribution to existing CG centers or not be supported by the CGIAR at all.

(b) Quality and Relevance Criteria would consider at least five questions:

(i) Whether the program or activity is of high scientific quality, with clearly defined objectives, and well focused.

(ii) Whether the program is filling an important gap among the array of CGIAR program endeavors.

(iii) Whether the program complements, without unwarranted duplication, those program activities that are already in progress within the CG centers.

(iv) Whether there are the advantages of the non-CG entity in undertaking the particular program activity rather than being undertaken within existing CG centers.

(v) The international character of the program, and its relevance to the CGIAR goals.

(vi) Evidence that the problems addressed by the program are researchable, and that there is a potential for breakthroughs.

(c) Institutional Criteria : Character, Governance, Management, Planning and Funding

(i) The non-CG entity should be international in character, research or research-related, and working in the developing countries in the fields of agriculture, or forestry, or fisheries or a combination of these.

(ii) Its activities should contribute to increasing food production in a sustainable manner, or to improving the management of natural resources, and should improve employment opportunities and the economic well-being of low-income farming households.

(iii) The objectives of the non-CG entity should be such that they could make a substantial contribution to one or more of the CGIAR program objectives.

(iv) The governing body should be similar in character to those of existing centers in the CGIAR: it should be international as well as independent of national and regional political interests.

(v) The patterns of internal organizational structure, the coordination mechanisms, and the management should be such that the non-CG entity can command the confidence of many donors

(vi) The non-CG entity should have an explicit financial plan, showing its program and budget, as well as income sources and expenditures for both capital and operations.

(vii) The non-CG entity should clearly show the proportion of funding which is unrestricted, and the probability of continued funding.

(d) The criteria identified above are those that could be employed by TAC in evaluating the non-CG entities for purposes of considering their incorporation into the CGIAR. The donors themselves will need to reach a consensus among themselves as to a final incorporation.

2. Operational Procedures and Implementation of Evaluation by TAC

The process of evaluation could proceed in two stages. The first stages would be to evaluate the appropriateness of activities, and their quality and relevance (preliminary application of first two sets of criteria). The second stage would be to fully evaluate activities/entities which have passed stage one, in terms of governance, management, organization and future program plans. The results of the second stage would be TACs recommendations to the CG. Tentative procedures for each stage are briefly discussed here. Final procedures would be approved by TAC.

Stage 1

Beginning immediately after ICW 1988, TAC could determine appropriate groupings of activities/institutes and constitute evaluation panels. One possible set of groupings could be as follows:

a. Forestry related - ICRAF and IUFRO

b.. Input related - IBSRAM, IFDC, IIMI

c. Commodity/Production - Africa - ICIPE, INIBAP, ITC

d. Commodity/Resource - Asia - AVRDC, ICLARM

A second grouping could be to combine a and b into a resource/input grouping and c and d into a commodity/resource grouping. A third possibility, based on regionality would be to group a and c (Africa and Europe) and b and d (Asia and North America).

Depending on the composition and number of groups chosen, TAC would constitute 2, 3, or 4 panels to conduct the stage one evaluation and to generate the necessary program and budget information required for TAC's evaluation of future global research priorities for the CGIAR. These panels would be made up of TAC members and external consultants (expert in the relevant subject matter areas). They would be asked to review all relevant information available on candidate activities /institutions. This information would be contained in strategic plans, budgets, review results and other appropriate information available. It is also appropriate the subsets (2 or 3 members) visit each of the institutions. These panels would also be asked to review

comparable subject matter in existing CG institutes so that a complete picture could be gained. These reviews would need to have a preliminary report available by March 1989 because they would provide necessary information for the analysis proposed in Section IV. They would also provide a basis for a preliminary TAC evaluation of whether there is an *a priori* case for possible inclusion of sets of activities and/or institutions.

Stage 2

Activities/institutions successfully passing Stage 1 would then be fully reviewed in a fashion comparable to current EPR/EMR procedures. It should not be necessary however to conduct a large number of individual reviews. First several of the non-associated centers have recently been, or soon will be, subjected to comprehensive reviews (e.g. IIMI and ICRAF in 1989). TAC could use these reviews to reach its judgement perhaps only seeking selected additional information. Second it would seem plausible that the same groups used in Stage 1 could be used to complete the final evaluation.

It is possible that TACs final recommendations could have at least the following range of recommendations (or combinations thereof):

(a) accept the entire institution and all of its subject matter activities

(b) accept the institutional structure and most, but not all, of its activities with recommendations for adjustment

(c) accept some subject matter activities of an institute (but not the institute) and either recommend transferring the activities to a CG institute or supporting them on a contractual basis within the non CG center.

(d) accept neither activities or the institution as proposed.

How the recommendation will turn out will depend on final procedures and the results of the analysis. However at this stage TAC needs to have a full range of options open to it. The timing of the analysis is proposed in the next section.

VII. A Proposed Time-Table for the Evaluation and Recommendations

June-October 1988	• TAC Secretariat collects all available written material on candidate institutes and presents TAC with an evaluation of the character and completeness of the information
October 1988	• TAC reviews Chair's paper outline and proposes a process
November 1988	• TAC Chairs paper outline is presented to CG with TACs proposal.
November to March 1989	• Completion of Sections II, III and IV of this outline

	• Constitution of 2, 3, or 4 evaluation panels to undertake Stage one evaluation.
March 1989	• TAC receives, revises and approves Section II, III & IV
	• TAC receives preliminary reports of evaluation panels at least as it relates to completing Charts 5 & 6
March 1989-June 1989	• evaluation panels complete work including visits to institutes.
May 1989	• TAC presents priority/activity paper (Sections II, III & IV) to CG and reports on progress of evaluation panels.
June 1989	• TAC receives reports of evaluation panels and decides on the reviews to be undertaken in Stage 2.
June-December 1989	• 2nd Stage review panels complete work of reviewing activities/institutes
October 1989	• Progress report to CGIAR
January-February 1990	• TAC receives review panel reports and analyzes them
March 1990	• TAC completes its evaluation and prepares recommendation to CGIAR
May 1990	• TAC recommendation to CGIAR • CG decision making

VIII. Implications for TAC

1. Short run (during process)

- activities to be delayed - commodity analysis and priority setting, papers on CG in global context; quantitative indicators in priority setting, revised priority paper; by at least one year.
- information gathering on coconuts would continue, but decision making delayed
- analysis of aquaculture would continue but decision making would be considered in the context of the overall review on non-associated centers.
- implications for TAC members - number of meetings - time spent
- need for additional staff and budget
- need for consultants

2. Long-run Implications for TAC operations, organization and resources.

Ultimately these will depend on final CG decisions, however elements to consider include:

- Changes in the major functions of TAC
- TAC Membership : size of committee, its composition and tenure
- Internal structure: subcommittees and the degree of delegation to them
- Length and frequency of TAC meetings
- Nature and scope of central services: role and functions of TAC Secretariat
- Operational funds and staffing